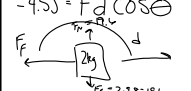

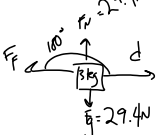

  
 $k=1000 \text{ N/m}$   
 $x=0.3 \text{ m}$   
 $m=2 \text{ kg}$   
 $ME_i = 0$   
 $ME_f = 0$   $\frac{1}{2}mv^2 = 0$   
 $W = \Delta E$   
 $ME_i = \frac{1}{2}(1000)(0.3)^2 = 45 \text{ J}$   
 $ME_f = 0$   $\frac{1}{2}mv^2 = 0$   
 $W = 0 - 45 = -45 \text{ J}$   
 $-45 \text{ J} = Fd \cos \theta$   

  
 $-45 \text{ J} = F \cdot d \cdot \cos 180$   
 $F_f = \mu_k F_N = (0.3)(19.6) = 5.88 \text{ N}$   
 $-45 \text{ J} = (5.88)(d) \cos 180$   
 $d = 0.77 \text{ m}$

Dec 15-7:28 AM

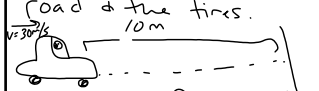

  
 $k=200 \text{ N/m}$   
 $x=0.1 \text{ m}$   
 $m=2 \text{ kg}$   
 $ME_i = \text{all spring}$   
 $= \frac{1}{2}(200)(0.1)^2 = 1 \text{ J}$   
 $ME_f = 0$   $\frac{1}{2}mv^2 = 0$   
 $W = \Delta E = -1 \text{ J}$   
 $-1 \text{ J} = Fd \cos \theta$   
 $-1 \text{ J} = F \cdot | \cos 180$   
 $1 = F_f = \mu_k \cdot 29.4 \text{ N}$   
 $\frac{1}{29.4} = \mu_k$

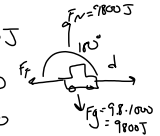
Find  $\mu_k$  of surface



Dec 15-7:53 AM

A car traveling @  $30 \text{ m/s}$  skids to a stop in  $10 \text{ m}$ .  
 Find  $\mu_k$  between the road & the tires.


  
 $ME_i = \frac{1}{2}(1000)(30)^2 = 450,000 \text{ J}$   
 $ME_f = 0$   $\frac{1}{2}mv^2 = 0$   
 $W = \Delta E = -450,000 \text{ J}$   
 $-450,000 \text{ J} = F_f \cdot 10 \cdot \cos \theta$   
 $-450,000 = F_f \cdot 10 \cdot \cos 180$   
 $45000 = F_f = \mu_k \cdot 9800$   
 $\mu_k = 4.6$



Dec 15-8:00 AM

Bungee jumper  $\rightarrow$  bridge  $100 \text{ m}$  high, rope  $40 \text{ m}$  long.  
 comes to rest @ end of rope, Find work done

$ME_i = mgh = (100)(9.8)(100) = 980,000 \text{ J}$   
 $ME_f = mgh_f = (100)(9.8)(40) = 392,000 \text{ J}$   
 $W = \Delta E = 392,000 - 980,000 = -588,000 \text{ J}$

Dec 15-8:07 AM